

EXPLANATION OF PLATES

Plate XIV

All the figures on this plate have been drawn from females only. Excepting figures 10 and 12, they have been made with the aid of a camera lucida and compound microscope, Zeiss compensating ocular 2, objective A with the lower lens removed.

Fig. 1. *Gomphus dilatatus* Rambur. Left lateral margin of abdominal segment eight, supero-lateral view at about 45° with the sagittal plane. $\times 9.6$.

Fig. 2. *Gomphus lineatifrons* new species, corresponding to fig. 1. $\times 9.6$.

Fig. 3. *Gomphus lineatifrons* new species. Supero-anterior view of occiput and vertex; *lo*, lateral ocellus; *ter* transverse vertex ridge, posterior to the ocelli. $\times 11.3$.

Fig. 4. *Gomphus lineatifrons* new species. Transverse vertex ridge and ocelli viewed from behind. $\times 11.3$.

Fig. 5. *Gomphus dilatatus* Rambur. Supero-anterior view of occiput (*oc*) and vertex. $\times 11.3$.

Figs. 6, 7. *Gomphus vastus* Walsh. Buckingham County, Virginia, June 21, 1919. 6, Supero-anterior view of occiput and vertex. 7, Transverse vertex ridge and ocelli viewed from behind. *lo*, lateral ocellus; *mo* median ocellus; *sp* vertex spine, between lateral ocellus and compound eye. $\times 11.3$.

Fig. 8. *Gomphus dilatatus* Rambur. Vulvar lamina. $\times 11.3$.

Fig. 9. *Gomphus lineatifrons* new species. Ventral view of ninth abdominal segment showing the vulvar lamina (*vl*). $\times 11.3$.

Fig. 10. *Gomphus dilatatus* Rambur, corresponding to figure 9. This figure was made from the type specimen in the Brussels Museum by the kindness of M. G. Severin, who writes that it bears these labels: "coll. Latreille", papier blanc, l'écriture d'un inconnu; 'Amer. sept.' papier blanc, encre rouge, écrit par inconnu; étiquette en papier doré sans écriture a été placé par Rambur sur tous les insectes de la collection Latreille pour les reconnaître; 'Gomphus dilatatus R ♀' papier blanc avec l'écriture de deSelys." \times about 11.

Fig. 11. *Gomphus lineatifrons* new species. Dorsal view of right half of thorax to show color pattern; *hs* black humeral stripe; *md* dark mid-dorsal stripe; *la* first pale antehumeral stripe. $\times 5.75$.

Fig. 12. *Gomphus dilatatus* Rambur. Diagram of the color pattern of the right half of thorax of Rambur's type, by M. G. Severin. For labels of this specimen see explanation of fig. 10 above. Of his original diagram, here copied, M. Severin writes: "Ces dessins sont d'un brun plus ou moins pale. La partie rouge [liere represented by the dotted area *h*] est un trou. À gauche du thorax il y a une couche de gomme laque qui cache le tout." The lettering of the pattern is the writer's [P.P.C.]: *hs* dark humeral stripe; *md* dark stripe on the obsolete first lateral thoracic suture; *2a* second pale antehumeral stripe.

Fig. 13. *Gomphus dilatatus* Rambur. Dorsal view of right half of thorax to show color pattern; lettering as in figs. 11 and 12. $\times 5.75$.

Figs. 1, 5, 8 and 13 of *Gomphus dilatatus* have been drawn from the female from Spring Creek, Decatur County, Georgia, June 7-23, 1911.

Figs. 2, 3, 4, 9 and 11 of *Gomphus lineatifrons* have been drawn from the type female from Weaver, Pennsylvania, June 17, 1917.

Plate XV

All the figures on this plate have been drawn from males only with the aid of the same optical apparatus as mentioned for Plate XIV, magnification 11.3.

Figs. 14, 15. *Gomphus dilatatus* Rambur. 14, Left profile view of hind end of abdomen; 15, Dorsal view of right superior abdominal appendage.

Fig. 16. *Gomphus lineatifrons* new species. Left profile view of hind end of abdomen.

Fig. 17. *G. dilatatus* Rambur. Latero-ventral view of the left side of the genitalia of abdominal segment two.

Fig. 18. *G. lineatifrons* new species. Dorsal view of right superior abdominal appendage.

Fig. 19. *G. vastus* Walsh. Left profile view of the anterior and posterior hamules of the second abdominal segment.

Fig. 20. *G. lineatifrons* new species. Latero-ventral view of the left side of the genitalia of abdominal segment two, penis not extended; *vp* vesicle of the penis.

Fig. 21. *G. dilatatus* Rambur. Penis and vesicle of the penis, extended.

Fig. 22. *G. lineatifrons* new species. Penis and its vesicle extended.

Fig. 23. *G. vastus* Walsh. Penis and its vesicle extended; *tp* tooth of the penis.

Figs. 14, 15, 17 and 21 of *G. dilatatus* Rambur have been drawn from the male from Florida (probably Suwanee Springs) taken by Mrs. Slosson.

Figs. 16, 18, 20 and 22 of *Gomphus lineatifrons* new species, have been drawn from a male from Tippecanoe River, Indiana, June 23, 1901.

Figs. 19 and 23 of *Gomphus vastus* Walsh have been drawn from a male from Elkhart, Indiana, May 17, 1896, taken by R. J. Weith.

A LIST OF THE CRANE-FLIES TAKEN IN THE VICINITY OF HAZLETON, PENNSYLVANIA

(DIPTERA)

BY W. G. DIETZ, M. D.

Hazleton, Pa.

The material forming the basis of this paper was collected by the writer during the past twelve years and is contained in the latter's collections. Hazleton, Luzerne County, Pennsylvania, is located on one of the highest plateaus in the State. The highest points within its limits are about eighteen hundred feet above sea-level. It is situated in the middle anthracite coal field and immediately over the Hazleton coal basin, and extends beyond the North outcrop. Underlying the coal measures are strata of "Pottsville Conglomerate" and "Mauch-Chunk Red Shale." Overlying them, are beds of slate and sandstone.

The general topography of the region is hilly or mountainous, traversed by creeks, brooks and rills. The vegetation, erstwhile, consisted essentially of hard-woods, with a lesser percentage of soft-woods and conifers. Practically all the large trees have been cut down for use in the coal industry, and, to-day, scrub oak furnishes the principal growths of our hills.

As to the climatic conditions, it may be stated, that the winters are rather severe, with considerable snowfall; the summers are rarely oppressively hot, though here, as elsewhere, seasons vary. As to the life zones, the fauna belongs to the Canadian and Transition Zones, with a predominance of northern forms.

Probably ninety percent of the material here used has been collected in the north-western quadrant of the region and within one mile and a half from the city limits.

The principal collecting places examined are:

1. A swampy part of what is known as Hazle Park, north-west of and adjacent to the borough of West Hazleton, the latter adjoining Hazleton proper. This is open, swampy ground, consisting chiefly of decayed vegetable matter. Here the vegetation

consists chiefly of *Accr*—young growth—, *Sambucus*, *Smilax*, *Rubus*, *Lappa*, *Bidens* and *Polygonum*. North-west of the Park is a very wet brush-swamp. The principal vegetation here consists of *Alnus*, *Betula*, ferns, etc. These two areas are directly upon the "Pottsville Conglomerate" series.

2. A circumscribed locality, less than one-half mile from the city limits, and situated on the east side of the highway in a northerly direction, and known as Fisher's Hill. This is open woodland, the principal trees are oak, maple and some pines; of lower growth, *Rhododendron*, *Sambucus*, *Alnus* and *Smilax*. The lower and more swampy portion is overgrown with *Polygonum pennsylvanicum*, and several interesting species were taken here, notably *Dicranomyia pellucidiguttata*. This area is also upon the "Pottsville Conglomerate."

North-west, and about six miles distant, is the Conyngham Valley, an agricultural district, the floor of which is about six to eight hundred feet lower than the Hazleton plateau. To the south-east of this Valley, is Conyngham Mountain. At the foot of the latter, and directly below the Hazleton Country Club House, is a small, very wet locality, surrounded by meadow and field land. Here considerable collecting was done. This area lies upon the lower series of the "Mauch Chunk Red Shale."

About six miles further up the Valley, in a north-easterly direction, is St. Johns, a farming village, situated on the north-west side of the Wilkes-Barre and Hazleton Railway. It is traversed by the Neseopeek Creek—a stream of considerable size. Collecting here was done chiefly in the swampy region to the north-west of the Railway, in the woodland to the east of it, and along the banks of the creek. This area is also upon the lower series of the "Mauch-Chunk Red Shale."

The species recorded in the following list number 163, and twenty of these are described here as new. They are distributed in three families and thirty-eight genera. It is singular that some species, which were common, or at least of frequent occurrence, during the earlier years of my collecting, have become rare, or have not been observed at all in later years. The reverse is true of others. The number of crane-flies recorded in the last New Jersey list, 1909, is 138. A comparison of the two lists forces the conclusion, that intensive collecting, even in our Eastern States, will bring to light many, as yet unknown, forms.

Although increasing the size of this paper considerably, I have deemed it proper to add the bibliography of the original description, as in instances where the description by the same author appeared in two different publications, such as in most of Say and Loew's species. A generic name in brackets, following the bibliographical citation, indicates the name of the genus under which it was described originally. In the arrangement I have followed, with few exceptions, that of Alexander.¹

Family PTYCHOPTERIDAE

Subfamily PTYCHOPTERINAE

Genus **PTYCHOPTERA** Meigen

Ptychoptera Meigen, Illiger's Mag., II, p. 262.

Ptychoptera rufocincta Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 282.

June to August. Common in swampy localities.

Subfamily BITTACOMORPHINAE

Genus **BITTACOMORPHA** Westwood

Bittacomorpha Westwood, London and Edinburgh Phil. Mag., 1835, VI, p. 281.

Bittacomorpha clavipes Fabricius, Spec. Ins., p. 404 (*Tipula*); Mant. Ins., II, p. 323 (*id.*); Ent. Syst., IV, p. 239 (*id.*); Syst. Antl., p. 22 (*Ptychoptera*).

May to September. Swampy localities; common locally.

Genus **BITTACOMORPHELLA** Alexander

Bittacomorphella Alexander Proc. Acad. Nat. Sci. Phila., 1916, p. 545.

Bittacomorphella jonesi Johnson, Psyche, 1905, p. 75.

Conyngnam Valley. August 15, 1911. A single male specimen taken.

Family RHYPHIDAE

Subfamily TRICHOCERINAE

Genus **TRICHOCERA** Meigen

Trichocera Meigen, Illiger's Mag., II, p. 262.

The species of this genus are in need of a critical revision,

¹ The Craneflies of New York, Part 1, 1919.

especially so in relation to those of other faunas. The species are common in early Spring and late Fall.

Trichocera bimacula Walker, List, 1, 1848, p. 84.

November 7, 1909, November 16, 1916. Only two specimens taken.

Trichocera hiemalis DeGeer, Ins., vi, p. 360, pl. xxi, fig. 1, 2, 5 (*Tipula*).

September 20, 1909, October 4, 1909.

Trichocera brumalis Fitch, Winter Insects of New York, p. 9, 1848.

Common in October and November.

Trichocera venosa spec. nov.

Brown; wing-veins seamed with fuscous.

Female, length, 6.5 mm.; wing, 7 mm.

General coloration brown. Head, rostrum, mouthparts and antennae concolorous. Thorax concolorous, the stripes not well-defined and but little darker than the narrower interspaces, the latter with a row of short white hairs, which are continued upon the scutum. The posterior margin of the scutellum with a row of short white hairs. Halteres pale, club infusate. Legs obscure yellow; femora darkened at the apex; tibiae yellowish brown; tarsi fuscous; pilosity very short, appressed, dark, more evident on the posterior tarsi. Wings subfuscous, all the veins, except A^1 and A^2 , distinctly seamed with fuscous, most conspicuous along the cord and the veins beyond, and Cu and its branches; a fuscous spot close to the origin of Rs; the fuscous margin on basal deflection of R^{1+5} and r-m and on the medial cross-vein, expanded into spots. The distance of the subcostal cross-vein from the origin of Rs equals Cu¹. Abdomen dark brown, with scattered, short white hairs; a dark fuscous spot near the lateral margin of tergites two to five. Ovipositor dark yellow, and, as usual in the genus, curved downward.

Holotype.—♀; Hazleton, Pennsylvania. October 4, 1920.

It is with some temerity I add this species to a genus, the species of which, at least of North America, are ill-defined and greatly in need of a thorough revision. The above species is greatly at variance with any other known to me. Its nearest allies appear to be *bimacula* Walker and *maculipennis* Meigen. The wings, however, are much darker, aside from the fuscous seaming of the veins. In wing color it resembles *subsinuata* Alexander, though a trifle darker; in the latter species, the wings are unicolorous.

Subfamily RHYPHINAE

Genus **RHYPHUS** Latreille

Rhyphus Latreille, Hist. Nat. Crust. et Ins., 1805, xiv, p. 291.

Rhyphus punctatus Fabricius, Mant. Ins., ii, p. 333 (*Rhagis*); Ent. Syst., iv, p. 274; (*id.*) Syst. Antl., p. 59 (*Sciara*).

June 25, 1905; July 3, 1909; September 7, 1910.

Family TIPULIDAE

Subfamily LIMNOBIINAE

Tribe *Limnobiini*Genus **GERANOMYIA** Haliday

Geranomyia Haliday, Ent. Mag., i, p. 154, 1833.

Geranomyia rostrata Say, Journ. Acad. Nat. Sci. Phila., iii, p. 22, 1823; Compl. Works, ii, p. 47 (*Limnobia*).

June to September. In wet places; not common.

Geranomyia canadensis Westwood, Ann. Soc. Ent. France, iv, p. 684, 1835 (*Limnobiorynchus*).

August, September. Rather common in swampy situations.

Geranomyia costomaculata spec. nov.

Dark fuscous. Thoracic stripes obliterated. Costal margin of wing with three fuscous spots. Sc ends opposite origin of Rs.

Female, length, 5.5 mm.; wing, 6.5 mm.

Head dark fuscous; rostrum about as long as the thorax, thickened about the palpal insertion. Scapal joints of the antennae stout, first joint pale and about one-half longer than the second joint, this and the flagellum dark brown; flagellar joints moniliform, the outer joints somewhat elongated and attenuated. Thorax fuscous, overlaid with a grayish bloom; stripes obsolete. Scutel whitish. Pleura concolorous. Halteres pale, knob and end of pedicel dark fuscous. Wings pale-gray, semipellucid; the Sc ends a trifle beyond the origin of the sector, the latter markedly curved at its base; the basal deflection of Cu, at the fork of M in the left wing, a little before the forking; a dark fuscous costal spot at about one-third the wing length, a second at the origin of Rs inclusive of end of the subcostal vein, a third spot, large, rhomboidal, includes the stigma. Legs pale fuscous, long, slender; femora, tibiae and tarsal joints darker apically. Abdomen brown, sparsely hairy. Ovipositor pale brown, and rather short.

Holotype.—♀; Hazleton, Pennsylvania. May 27, 1920.

Agrees with *A. diversa* Osten-Sacken in the termination of the subcostal vein. The costal spots distinguish it from our other species.

Genus **DISCOBOLA** Osten-Sacken

Discobola Osten-Sacken Proc. Ent. Soc. Phila., p. 226, 1865; Mon. N. A. Dipt., iv, p. 97 (*Trochobola*).

Discobola argus Say, Long's Exped., App., p. 358; Complete Works, i, p. 243 (*Limnobia*).

Not common. July 2, 1917; September 9, 1914; September 9, 1910; September 11, 1920. Mr. Harry B. Weiss of the New Jersey Department of Agriculture has bred this species from *Polyporus albellus*.

Genus **RHIPIDIA** Meigen

Rhipidia Meigen, Syst. Besch., i, p. 153.

Rhipidia maculata Meigen, Syst. Besch., i, p. 153, pl. v, fig. 9 to 11.

Rare in July and August, common in September and even October.

Rhipidia domestica Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 208; Mon. N. A. Dipt., iv, p. 84, pl. iii, fig. 5.

A single male specimen, taken May 15, 1911. Conyngham Valley.

Genus **DICRANOMYIA** Stephens

Dicranomyia Stephens, Cat. Brit. Ins., ii, p. 243, 1829.

Dicranomyia longipennis Schum., Beitr. zur Ent., i, p. 101, pl. i, fig. 2, 1829, (*Limnobia*).

I have never taken this species in numbers. June 13, 1912, May 12, 1912; August 30, 1913; August 10, 1914; September 17, 1910; September 15, 1914 and 1915; September 29, 1919. Very few specimens seen in later years.

Dicranomyia gladiator Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 212; Mon. N. A. Dipt., iv, p. 63, pl. iii, fig. 4.

Very common in a swampy place, overgrown with *Polygonum pennsylvanicum* L.; July.

Dicranomyia immodesta Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 211; Mon. N. A. Dipt., iv, p. 62.

Not common. July 27, 1910; September 27, 1919; May 28, 1919; Sept. 1, 1920.

Dicranomyia diversa Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 212; Mon. N. A. Dipt., iv, p. 64.

Rare. May 18, 1919; June 7 and 19, 1912; June 29, 1913; August 25, 1914.

Dicranomyia pudica Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 212; Mon. N. A. Dipt., iv, p. 64.

Rare. June 3, 1913; June 12, 1916.

Dicranomyia isabellina Doane, Journ. N. Y. Ent. Soc., viii, p. 183, pl. 7, fig. 5, 1900.

Infrequent. July 27, 1915; September 19, 1915; October 2, 1917.

Dicranomyia flavescens spec. nov.

Close to *brevivena*.

Male, length, 3.5 mm.; wing, 5.5 mm.

Head black, occiput grayish-silvery; rostrum dark yellow; palpi entirely fuscous. Antennae fuscous, rather robust, flagellar joints subcylindrical. Thorax dull yellow, a little darker above, the stripes faint, the median one divided by a pale line. Halteres pale brown, club dark brown. Legs pale yellow throughout, pubescence fine, very short. Wings yellowish, subpellucid, with an iridescent luster. The Sc ends about the length of the stigma before the origin of the sector; Sc¹ about as long as the stigma. Rs and R⁴⁺⁵ subequal; cell 1st M² closed. Abdomen yellow, a trifle darker above.

Holotype.—♂; Hazleton, Pennsylvania, September 24, 1919.

Paratypes, two males, topotypic.

Differs from *brevivena* in its dull yellow thorax, indistinct stripes, the median one divided by a pale line, and the abdomen much less darkened above.

Dicranomyia pennsylvanica spec. nov.

Close to *flavescens*.

Male, length, 5 mm.; wing 5.5 mm.

Head, palpi and antennae fuscous; rostrum yellow; the first three joints of the antennae somewhat incrassate, rest of flagellum slender, joints ovoidal, longer than wide, with a dense, fine, pale pubescence. Thorax reddish-yellow, the median stripe reddish-brown, strongly marked, shining and extending upon the neck; the lateral stripes less distinct and extend upon the scutum. Pleura pale. Halteres pale, lightly infusate apically, club dark fuscous. Legs pale, pubescence scarcely noticeable; tarsi infusate towards the apex. Wings somewhat narrow, iridescent, pellucid; Sc ends just before origin of sector; Sc¹ about as long as the stigma, the latter pale; Rs

approximately twice the length of R^{4+5} ; cell 1st M^2 closed. Abdomen darker above, the tergites indistinctly margined with fuscous posteriorly; venter pale. Hypopygium brownish-yellow.

Holotype.—♂; Hazleton, Pennsylvania. July 20, 1920.

Distinguished from *flavescens* by the conspicuous, shining median stripe, and Rs nearly twice the length of R^{4+5} .

Dicranomyia brevivena Osten-Sacken, Mon. N. A. Dipt., iv, p. 66, 1869.

Not rare; September.

Dicranomyia diversoides spec. nov.

Very close to *diversa*.

Female, length, 4.5 mm.; wing, 5.3 mm.

Yellow; head above and face yellowish-gray; rostrum and palpi dark brown. Antennae yellowish; outer half of first scapal joint, and second scapal joint almost entirely, brown. Thorax entirely yellow, stripes obsolete, somewhat shining above. Pleura with a faint, whitish bloom. Halteres pale, knob fuscous. Legs pale yellow, finely pubescent; outer tarsal joints darker. Wings with a faint yellowish tint; stigma scarcely indicated; veins pale, R and Sc darker, the latter ends opposite origin of Rs; Sc^1 very long, approximately as long as the sector, the latter distinctly longer than R^{4+5} , the latter strongly curved; cell 1st M^2 closed. Abdomen yellow, with scant, dispersed, pale hairs. Ovipositor concolorous, short.

Holotype.—♀; Hazleton, Pennsylvania. August 4, 1920.

Although closely resembling *diversa* and *pudica*, it is at once distinguished from the former by Rs distinctly longer than R^{2+3} , from the latter by the very long Sc^1 , and from both by the dark brown rostrum.

Infrequent. August 11, 1913; September 19, 1913; September 27, 1919.

Dicranomyia badia Walker, List, i, p. 46, pl. xxi, fig. 20, (*Limnobia*); Osten-Sacken, Proc. Acad. Nat. Sci. Philada., 1859, p. 210, (*humidicola*); Mon. N. A. Dipt., iv, p. 72, pl. iii, fig. 2.

Rare. Not taken in recent years. August 15, 1911; September 21, 1910.

Dicranomyia helva Doane, Journ. N. Y. Ent. Soc., viii, p. 183, pl. vii, fig. 4.

Rare. September 15, 1914; September 30, 1915; October 7, 1913.

Dicranomyia halterata Osten-Sacken, Mon. N. A. Dipt., iv, p. 71, 1869.

Infrequent. May 27, 1916; September 24, 1918.

Diceranomyia ochracea Doane, Journ. N. Y. Ent. Soc., viii, p. 182, pl. vii, fig. 1.

Rare. Only two specimens taken. August 11, 1913; September 5, 1917.

Diceranomyia gracilis Doane, Journ. N. Y. Jour. Ent. Soc., viii, p. 184, pl. vii, fig. 1.

Not rare. June 7, 1910; July 27, 1915; August 1, 1918; September 2, 1915.

Diceranomyia distans Osten-Sacken, Proc. Acad. Nat. Sci. Philada., 1859, p. 211.

Rare. June 21, 1919; October 7, 1913.

Diceranomyia liberta Osten-Sacken, Proc. Acad. Nat. Sci. Philada., 1859, p. 209; Mon. N. A. Dipt., iv, p. 69, pl. iii, fig. 3.

Very common. Damp situations; May to October.

Diceranomyia globithorax Osten-Sacken, Mon. N. A. Dipt., iv, p. 74.

Rather frequent. August to October.

Diceranomyia pubipennis Osten-Sacken, Proc. Acad. Nat. Sci. Philada., 1859, p. 211; Mon. N. A. Dipt., iv, p. 73, pl. i, fig. 2.

Common. June to October, in swampy places.

Diceranomyia varipes spec. nov.

Brownish yellow; Se long, ends some distance beyond the origin of the sector. Tarsal joints three and four white.

Male, length, 5.5 mm.; wing, 6 mm.

Head brownish-yellow; rostrum yellow, short; palpi dark brown, extreme base pale; face yellowish-white. Antennae dark brown, four basal joints large, cyathiform, following joints diminishing in thickness, last three joints elongate, slender. Thorax shining, brownish-yellow above; stripes obsolete; a fine, dark fuscous median line; a similar line, limiting the space occupied by the lateral stripes; pronotum and lateral thoracic margin a little paler with a pale sheen. Pleura paler with a faint sheen, shining. Halteres rather short, pale brown, club dark fuscous, elongate and but little broader than the pedicle. Legs yellowish, tarsal joints three and four white, last joint almost black. Wings light grayish-fuscous, slightly darker in apical portion. Se ends at a considerable distance beyond the origin of Rs, Se¹ very short. Rs nearly twice the length of R¹+⁴, very slightly curved; stigma pale fuscous, cross-vein r heavily infuscated, cell 1st M² closed. Abdomen brown above, shining; venter yellowish-brown; eight sternite pale yellow. Hypopygium brownish-yellow; the lower appendages smaller than usual in this genus.

Female, length, 4 mm.; wing, 5.5 mm.

General aspect a little darker; basal joints of antennae less thickened. Ovipositor sordid yellow, short.

Holotype.—♂; Hazleton, Pennsylvania. September 19, 1912.

Allotype.—♀; topotypic, September 22, 1912.

Paratypes, seven males and seven females, typotypic, September 17 to 23, 1912. All bred from a fungus on the trunk of a dead birch tree.

The long Sc with the peculiar coloration of the tarsal joints readily distinguish this species from all others.

***Diceranomyia pellucidiguttata* spec. nov.**

Wings light fuscous, with pellucid spots and patches in all the cells; long; femora with a pale band before the apex.

Female, length, 7 mm.; wing, 7.5 mm.

Head, rostrum, palpi and scapal joints of the antennae, brownish-black; flagellar joints light brown, joints oval, outer joints more elongate, each joint with one or two long setae on the underside, and some of the segments with one or two short setae on the upper side. Thorax coffee brown, shining; pronotum and lateral margin paler; the median stripe of the presentum ill-defined and a trifle paler than the ground color, more so anteriorly. Scutum with pale, median vitta. Postnotum paler. Pleura pale brown with a faint sheen. Halteres pale fuscous in basal half, outer half including club, fuscous. Legs brownish-yellow, pilosity moderately long and dense; coxae yellow; femora with a pale, subapical band; tibiae and tarsi darker, claws very small, with a slender tooth near the base beneath. Wings ample, light fuscous, with pellucid, or sub-pellucid, spots or patches in all the cells, except M²; the spots predominate in the apical cells, the patches, irregular or streak-like, in cells R, M, Cu, and A¹. Sc long, ending at some distance beyond the origin of Rs; Sc¹⁺² subequal. Stigma large, oval, brown, a small, dark fuscous spot at end of Sc; Cu dark brown, seamed with fuscous; vein A¹ slightly, A² more markedly, undulated; cell 1st M² closed. Abdomen brown, tergites indistinctly paler posteriorly; venter paler near the base. Ovipositor short, sordid yellowish, dorsal valves curved upward.

Holotype.—♀; Hazleton, Pennsylvania. July 22, 1915.

Taken in company with *D. gladiator*, in a swampy location at the foot of Fisher's Hill, to the right of the highway, north of the city.

This pretty fly is unlike any other known to me. The long Sc, spotted wings and banded femora are similar to *simulans* Walker; it differs in the spots being pale on a darker ground color.

Genus **LIMNOBIA** Meigen

Limnobia Meigen, Illiger's Mag., ii, p. 262, 1803.

Limnobia fallax Johnson, Proc. Boston, Soc. Nat. Hist., xxxiv, p. 125, 1909.

Rare. July 19, 1915. Two specimens, at Fisher's Hill.

Limnobia indigena Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1861, p. 215, pl. 3, fig. 3; Mon. N. A. Dipt., iv, p. 94, pl. iii, fig. 7.

Infrequent. June 5, 15 and 27, 1911; October 2, 1919.

Limnobia tristigma Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 216; Mon. N. A. Dipt., iv, p. 94.

Common in open woods. July.

Limnobia triocellata Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 216; Mon. N. A. Dipt., iv, p. 92.

Not rare. August and September. I have bred this species from a *Polyporus*.

Tribe *Antochini*

Genus **RHAMPHIDIA** Meigen

Rhamphidia Meigen, Syst. Besch., vi, p. 281.

Rhamphidia flavipes Macquart, Dipt. Exot. Suppl., v, p. 17, pl. 1, fig. 4.

Rather common, in damp places; May to September.

Genus **ELEPHANTOMYIA** Osten-Sacken

Elephantomyia Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 220; Mon. N. A. Dipt., iv, 106, 1869.

Elephantomyia westwoodi Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 221; Mon. N. A. Dipt., iv, p. 109, pl. i, fig. 5 and pl. iii, fig. 8.

Common in wet places with abundant vegetation; June to August.

Genus **TOXORHINA** Loew

Toxorhina Loew, Linnaea Entomol., v, p. 400.

Toxorhina muliebris Osten-Sacken, Proc. Ent. Soc. Phila., p. 233, 1865; Mon. N. A. Dipt., iv, p. 115; iii, App.

Rare. June 29, 1912; July 7, 1919; July 1, 1920.

Genus **ATARBA** Osten-Sacken

Atarba Osten-Sacken, Mon. N. A. Dipt., iv, p. 127, 1869.

Atarba picticornis Osten-Sacken, Mon. N. A. Dipt., iv, p. 128, pl. i, fig. 13.

Rare. July 29, 1912; July 1, 1919; July 6, 1920. Only three specimens taken.

Genus **ANTOCHA** Osten-Sacken

Antocha Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 219; Mon. N. A. Dipt., iv, p. 125, 1869.

Antocha saxicola Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 219, (*Antocha opalizans* Osten-Sacken, syn.); Mon. N. A. Dipt., iv, p. 126, pl. i, fig. 11, and pl. iii, fig. 10.

Rare. A single example taken, June 26, 1909.

Tribe *Eriopterini*Genus **GONOMYIA** Meigen

Gonomyia Meigen Syst. Besch., i, p. 146.

Gonomyia manea Osten-Sacken, Mon. N. A. Dipt., iv, p. 178, 1869.

St. Johns. June 21, 1918, six specimens; the only record.

Gonomyia sulphurella Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 230; Mon. N. A. Dipt., iv, p. 180, pl. ii, fig. 2.

Not common. June and September.

Gonomyia subcinerea Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 231; Mon. N. A. Dipt., iv, p. 181, pl. ii, fig. 2.

Searce. May 29, 1912; July 18, 1910; July 27, 1915; July 20, 1920; September 2, 1915; September 12, 1917.

Genus **EMPEDA** Osten-Sacken

Empeda Osten-Sacken, Mon. N. A. Dipt., iv, p. 183, 1869.

Empeda stigmatica Osten-Sacken, Mon. N. A. Dipt., iv, p. 184, 1869.

Common locally. May to September.

Genus **HELOBIA** St. Fargeau and Serville

Helobia St. Fargeau and Serville, Encyclop. Method., Ins., x, p. 585.

Helobia hybrida Meigen, Klassif., p. 57, 1804; System. Besch., i, p. 147, (*Limnobia*); vi, p. 283, (*Symplecta*).

Generally distributed. At times common; from April to late Fall.

Genus **GNOPHOMYIA** Osten-Sacken

Gnophomyia Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 223; Mon. N. A. Dipt., iv, p. 172, 1869.

Gnophomyia tristissima Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 224; Mon. N. A. Dipt., iv, p. 174.

Rare. May 29, 1916; July 19, 1911.

Genus **ERIOPTERA** Meigen

Erioptera Meigen, Illiger's Mag., II, p. 262.

Subgenus **Erioptera** Meigen

Erioptera septentrionis Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 226; Mon. N. A. Dipt., iv, p. 155.

Very common. Occurs from early Spring until late Fall; often seen in swarms in September.

Erioptera chrysocoma Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 226; Mon. N. A. Dipt., iv, p. 155.

Rather common some seasons, rare others. June, July and August. Common in 1910 to 1912 and again in July, 1920.

Erioptera vespertina Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 226, pl. 4, fig. 19; Mon. N. A. Dipt., iv, p. 157, pl. iv, fig. 20.

Not common. June 19, 1912; June 21, 1919; July 18, 1910.

Erioptera chlorophylla Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 226; Mon. N. A. Dipt., iv, p. 157, pl. 4, fig. 7.

Rare. July 6, 1920, August 29, 1919.

Erioptera holoptica spec. nov.

Near *megalophthalma* Alexander. Eyes large, narrowly separated above, broadly continuous beneath. Thoracic stripes well-marked; scutellum and postnotum spotted with reddish-brown.

Male, length, 3.5 mm.; wing, 4.2 mm.

Rostrum and mouthparts brownish; the narrow space between the eyes projects as a yellow, elevated ridge. Antennae rather short; scapal joints large, the first dark brown, the second paler; three to four basal joints of flagellum pale yellow, rapidly diminishing in thickness, outer joints very slender, light fuscous. Thorax pale yellow, presutal stripes reddish-brown, very broad, leaving a very narrow interspace of the ground-color; the lateral stripes of the prescutum are broadly continued upon the scutellum, leaving a narrow line of the ground color each side of the median line; a median stripe of scutellum and postnotum, and posterior border of scutellum, yellowish-

brown. Pleura light brownish-yellow, with a slight sheen. Halteres sulphur-yellow, rather short, club large. Legs pale sulphur-yellow, pilosity sparse, scarcely perceptible except on the tarsi, outer joints of the latter infusate. Wings pale yellowish; veins pale, yellowish, weak; pubescence short, inconspicuous. Abdomen pale, reddish-brown, pilosity pale yellow, short and sparse. Hypopygium reddish-yellow.

Holotype.—♂; Hazleton, Pennsylvania. June 18, 1914.

Paratypes, males, topotypic, two, July and August, 1910; one, August 1912; two, July 1913; one, August 1914; one, June 1915; one, June 1916; one, August 1919; one male Palmerton, Carbon County, Pennsylvania, June 6, 1920.

Distinguished from *megalophthalma* by its smaller size, absence of silvery line along inner orbital margin, well-marked thoracic stripes and strongly marked spotted scutum, scutellum and postnotum.

A certain divergence from the type is observed in the eye, which in some specimens appears to be quite holoptic, while the inter-orbital ridge in others is nearly yellowish-brown. The color of the rostrum likewise varies from yellowish to brownish. The thoracic stripes, however, are well marked in all my specimens.

Two specimens, taken in 1920, differ sufficiently to be considered as a new variety.

***Erioptera holoptica fusco-antennata* var. nov.**

Rostrum, mouth-parts and antennae, entirely dark fuscous. Antennae a little longer and less slender. The wings rather pale grayish, instead of yellowish.

Holotype.—♂; Hazleton, Pennsylvania. May 27, 1920.

Paratype.—♂; topotypic.

It appears that *E. megalophthalma* Alexander, the above described species and variety, and *macrophthalma* Loew (Europe), form a distinct group, if not a subgenus.

Subgenus ***Acyphona*** Osten-Sacken

Mon. N. A. Dipt., iv, p. 151, pl. n, fig. 17.

Erioptera venusta Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 227, pl. iv, fig. 23; Mon. N. A. Dipt., iv, p. 157, pl. iv, fig. 20.

Rare. July 5, 1910; July 7, 1913; July 20, 1920.

Erioptera armillaris Osten-Sacken, Mon. N. A. Dipt., iv, p. 158, 1869.

Rare. July 14, 18, 23, 1910; July 29, 1912.

Subgenus **Hoplolabis** Osten-Sacken

Mon. N. A. Dipt., iv, p. 152, pl. 1, fig. 18.

Erioptera armata Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 227, pl. 4, figs. 20, 21; Mon. N. A. Dipt., iv, p. 160, pl. 1, fig. 18, and pl. iv, fig. 11.

Not rare. May to September.

Subgenus **Mesocyphona** Osten-Sacken

Mon. N. A. Dipt., iv, p. 152.

Erioptera caloptera Say, Journ. Acad. Nat. Sci. Phila., iii, p. 17; Complete Works, ii, p. 41.

Common. June to October.

Erioptera needhami Alexander, Can. Ent., 1, p. 283, 1918.

A single specimen, taken July 7, 1910.

Genus **MOLOPHILUS** Curtis

Molophilus Curtis, Brit. Entomol., p. 144, 1833.

Molophilus pubipennis Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 228, (*Erioptera*); Mon. N. A. Dipt., iv, p. 162.

Very common. June to September.

Molophilus fultonensis Alexander, Proc. Acad. Nat. Sci. Phila., 1916, pp. 505 to 506, pl. xxvii, fig. 37.

Common with the preceding in damp situations. June to August.

Molophilus hirtipennis Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 228, (*Erioptera*); Mon. N. A. Dipt., iv, p. 163.

Very common, especially late in the season. Occurs from May to September.

Molophilus forcipula Osten-Sacken, Mon. N. A. Dipt., iv, p. 163, 1869, (*Erioptera*).

Rather scarce from May to August; very common in September among low herbage in swampy situations.

Molophilus forcipula heterocera subsp. nov.

Differs from the typical form in the pale yellow antennal flagellum; the first scapal joint brown, the second, yellowish-brown. The sulphur-yellow humeral spot is scarcely noticeable. Other differences, if any, I fail to see.

Holotype.—♂; Hazleton, Pennsylvania. September 16, 1913.

Paratype, two males, topotypic, same date.

Molophilus costopunctatus spec. nov.

Close to *forcipula*. Scapal and basal joints of flagellum, pale yellow. Wings with a dark fuscous costal spot.

Male, length, 2.3 mm.; wing, 4 mm.

Head reddish-brown above, palpi and rostrum dark fuscous. Antennae a little longer than the prescutum; scapal and basal joints pale yellow, outer joints light brown. Thorax light brown above. Pronotum, lateral margin of prescutum and scutum, light yellow; pseudosutural foveae dark; stripes indistinct; a fine, darker, median line in anterior half. Pleura darker brown. Halteres pale, club fuscous. Legs yellowish-brown, coxae and base of femora paler; tarsi fuscous; pubescence fine, short. Wings pale with a yellowish tint; veins pale; a small but conspicuous, blackish spot on the costal margin, midway between cross vein r and end of R; basal deflection of Cu¹ longer and nearly in a line with the basal deflection of M³⁺⁴; pilosity pale, fine, long and inconspicuous. Abdomen brown, venter scarcely paler, with pale yellow hairs. Hypopygium reddish-brown; pleurites elongated, dorsal appendages blackish, claw-like, curved dorsad; ventral appendages similar, curved ventrad.

Holotype.—♂; Hazleton, Pennsylvania. September 16, 1913.

Easily recognized by the dark costal spot.

Genus **ORMOSIA** Rondani

Ormosia Rondani, Prodrornus, 1, p. 180.

Ormosia atriceps Dietz, Trans. Amer. Ent. Soc., XLII, p. 136, pl. x, fig. 1.

The holotype is the only specimen taken thus far. July 11, 1913.

Ormosia nubila Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 227, (*Erioptera*); Mon. N. A. Dipt., iv, p. 141, pl. 1, fig. 14.

Common in swampy localities; May. A number of specimens in my collection from other localities are labeled August and September.

Ormosia arcuata Doane, Ent. News, XIX, p. 201, 1908, (*Rhypholophus*).

Common. April and May, and again in September along rivulets.

Ormosia abnormis Dietz, Trans. Amer. Ent. Soc. XLII, p. 137, pl. x, fig. 3.

No more examples have turned up since the species was de-

scribed. August 25 and 31, 1914, and August 25 and September 3, 1913.

Ormosia luteola Dietz, Trans. Amer. Ent. Soc., XLII, p. 138, pl. x, fig. 4.

The same remarks, as under the preceding species, apply here. June 11, 1913, July 1, 1913; July 25, 1914.

Ormosia pygmaea Alexander, Psyche, XIX, p. 166, pl. XIII, fig. 3, 1912, (*Trimicra*); *Ormosia pilosa* Dietz, Trans. Amer. Ent. Soc., XLII, p. 139, pl. x, fig. 5.

Not rare. May to September.

Ormosia nigrispila Osten-Sacken, Mon. N. A. Dipt., IV, p. 142, 1869, (*Rhypholophus*).

Rare. May and June; common in September in swamps.

Ormosia palpalis Dietz, Trans. Amer. Ent. Soc., XLII, p. 140, pl. x, fig. 6.

No additions to be reported to the holotype and single paratype; October 16, 1913; September 14, 1915.

Ormosia rubella Osten-Sacken, Mon. N. A. Dipt., IV, p. 144, pl. 1, fig. 15, (*Rhypholophus*).

Very common. September and October.

Ormosia rubella enigmatica variety(?) nov.

This female specimen, agrees in every particular with the normal form except in the head, which is prolonged into a rostrum nearly as long as the thorax, moderately curved and of nearly equal thickness, tapering towards the apex. I cannot discover any palpal structures, except two very short projections near the base above. It may prove a freak.

Holotype.—♀; Hazleton, Pennsylvania. September 19, 1918.

Ormosia deviata Dietz, Trans. Amer. Ent. Soc., XLII, p. 143, pl. x, figs. 9 and 9a.

Not rare. May and June, and again in September.

Ormosia meigenii Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 226, (*Erioptera*); Mon. N. A. Dipt., IV, p. 144, (*Rhypholophus*).

This species was very common in May 1910 and 1911, but since then no specimens have been taken.

Ormosia subcostata spec. nov.

Wings unicolorous; costa darker from density of pubescence, the stigma a trifle darker; cell 1st M² opens into cell M³; anal veins converging.

Male, length, 4 mm.; wing, 5.5 mm.

Head gray above; rostrum and mouth-parts dark brown. Antennae light brown, of moderate length, slender; covered with a long, dense, whitish pilosity, approximately as long as the segments, and giving the antennae a pale appearance. Thorax grayish-livid, with a grayish-white pruinosity; sordid yellow, median dorsal stripe, wider anteriorly, margined each side by a dark, fuscous line, the latter becoming wider posteriorly; exteriorly to these lines, is a row of short, whitish hairs and beside these are scattered, whitish hairs. Postnotum darker. Pleura reddish-brown with whitish pruinosity. Halteres sordid yellow, club paler. Legs yellow, pubescence short and fine (tarsi wanting). Wings yellowish-gray, base more yellowish; costal cells and cell 2nd R appear infuscated; the darkening being due to the density of the pubescence; stigmal region a trifle darker. Veins rather strong, brown; cell 1st M^2 opens into cell M^3 ; anal veins approach each other towards the wing margin. Pubescence long, brown and conspicuous, giving the wing a sub-fuscous appearance. Abdomen brown, covered with long, yellowish hairs. Hypopygium concolorous, pleurites large, bent ventrad and diverging; appendages small, blackish; the ninth sternite prolonged into a spatulate process.

Holotype. — ♂; Hazleton, Pennsylvania. August 15, 1911.

Its nearest ally appears to be *perplexa*, from which it differs in its larger size, more slender antennae and the pale, median, thoracic stripe. The two dark lines, edging the yellow median stripe, resemble in some respect the dark thoracic lines of *bilineata*; the latter, however, is devoid of a yellow median stripe, besides other differences.

Ormosia divergens Dietz, Trans. Amer. Ent. Soc., XLII, p. 141, pl. x, fig. 10.

Rare. July 5, 1910 and July 22, 1915; June 14, 1915.

Ormosia monticola Osten-Sacken, Mon. N. A. Dipt., IV, p. 145, 1869, (*Rhyptolophus*).

Not common. June, September.

Tribe *Linnophilini*

Genus **ULA** Halidae

Ent. Mag., I, p. 153.

Ula paupera Osten-Sacken, Mon. N. A. Dipt., IV, p. 232.

Rare. May 25, 1912; September 29, 1919 and September 11, 1920. Only three specimens taken.

Ula longicornis spec. nov.

Antennae (♂) much longer than in *U. paupera* (♂), not paler at base. Thorax with sharply defined, broad, shining, brown stripes.

Male, length, 5 mm.; wing, 6.5 mm.

Head, rostrum and palpi, dark fuscous; a grayish margin along the orbits. Antennae long and slender, extended backward, they reach to about the middle of the abdomen; scapal joints short, not paler; basal flagellar segments about three times as long as thick, outer segments at least twice the length of their thickness; pubescence whitish, dense and evenly distributed; very few, but long, verticellar setae. Thorax brownish, with pale pollinosity and some luster; a sharply defined, rather broad, very shining, darker median stripe present. Pleura grayish-brown, pollinose. Halteres pale, club dark fuscous apically. Legs sordid yellow; anterior femora brown, except at base; outer half of middle femora, and apical part of posterior femora, brownish. Pubescence dense, and rather coarse. Wings grayish, unicolorous; veins brown; pubescence fine and evenly distributed. Abdomen brown, pilosity long, scattered. Hypopygium yellow, hairy; upper appendages blackish, short, claw-like.

Holotype.—♂; Hazleton, Pennsylvania. August 6, 1920.

Distinguished from *paupera*, by the unicolorous and more strongly elongated antennae.

Genus **ULOMORPHA** Osten-Sacken

Ulomorpha Osten-Sacken, Mon. N. A. Dipt., iv, p. 232.

Ulomorpha pilosella Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 241, (*Linnophila*); Mon. N. A. Dipt., iv, p. 233, 1869.

Not rare. May to September.

Genus **ADELPHOMYIA** Bergroth

Adelphomyia Bergroth, Mittheil. Naturfor. Ges. Bern., 1890, p. 134.

Adelphomyia minuta Alexander, Can. Ent., XLIII, p. 287, 1911.

Plentiful in a small, swampy locality, May 26, 1919, also, St. Johns, May 28, 1920. Not taken before.

Adelphomyia pleuralis spec. nov.

General coloration reddish-brown. Cell M¹ present, cross-vein r absent; wing pubescence distinct. Pleura with fuscous stripes.

Male, length, 2.5 mm.; wing, 3.7 mm.

Head, rostrum and mouthparts dark fuscous; occiput dark gray with white periorbital line. Antennae, with the exception of the second joint, brown, the latter blackish; verticels strongly marked, pubescence short, pale. Thorax brownish-yellow, slightly pollinose, with some luster above; antero-lateral margin paler. Pleura paler, whitish pollinose; a dark fuscous, oblique line from the pronotum across the mesosternum; another fuscous line, parallel with the former, along the base of the coxae. Halteres, pale throughout. Legs yellow; femora infuscate at the apex; tarsi scarcely darker; pilosity

long and dense, especially on the tarsi. Wings semi-pellucid; pubescence rather long, and quite distinct in apical portion of wing; stigma indicated by a slight darkening of the membrane; cross-vein *r* absent; the *Sc* ends just about on a line with the basal deflection of $R^1 + ^5$; Sc^1 about five or six times the length of Sc^2 ; sector long, slightly curved at its origin, and about as long as R^2 ; basal deflection of $R^1 + ^5$, a little more than one-half the length of cross-vein *r-m*, the latter is four-fifths the length of the basal deflection of Cu^1 , the latter before the middle of cell 1st M^2 . Abdomen light brown, sparsely hairy, hairs long; eighth segment nearly black. Hypopygium honey-yellow, hairy; appendages strong, claw-like, blackish.

Female, length, 3 mm.; wing, 4.5 mm.

Abdomen light brown, the penultimate segment scarcely darker. Ovipositor yellowish, curved upwards, the apical half of the valves blackish.

Holotype.—♂; Hazleton, Pennsylvania. July 6, 1920.

Allotype.—♀; topotypic, June 21, 1919.

Paratypes, five males, July 6, 1910; five males, June 28, 1920; one female, July 6, 1920. All topotypic.

This species resembles *A. americana* in its general coloration. The fuscous pleural stripes distinguish it from the three heretofore described American species. In some specimens cross-vein *r* is faintly indicated, and I find this also in some examples of *minuta*. The almost black, second antennal joint and penultimate abdominal segment of the male, are quite constant. The pedicle of cell M^1 varies from three to four times the length of the cell.

***Adelphomyia hazletonensis* spec. nov.**

Near *cayuga*. Cell M^1 absent; cross-vein *r* distinct.

Male, length, 3 mm.; wing, 4.3 mm.

General coloration yellowish-brown. Head grayish-brown above; rostrum, palpi and antennae dark brown, five to six basal joints incrassate, the flagellar joints one to three or four somewhat fused together, remainder of flagellum slender, joints elongate; hairs of the verticils very long, pubescence very fine. Thorax brown, shining; stripes obsolete; anterior half of pleura brown, posterior half yellowish-gray. Basal half of pedicle of halteres white, outer half light brown, club dark brown. Legs dusky yellow; pilosity long, dense, brown, giving the legs a fuscous color; tarsi fuscous; tibiae nearly twice the length of the metatarsi, apical spurs very minute. Wings pale gray; veins brown, *M* weak; cross-vein *r* distinct, Sc^1 long, nearly equal to $R^2 + ^3$, cell M^1 wanting; veins Cu^2 , A^1 and A^2 strongly incurved to the wing-margin; pubescence very sparse and confined to the apex of the wing, scattered long hairs over the wing surface; veins with setigerous punctures. Abdomen brown, somewhat paler beneath, with scattered hairs. Hypopygium brown, pleurites elongate, densely hairy.

Holotype.—♂; Hazleton, Pennsylvania. September 1, 1920.

Paratype.—♂, topotype and taken same day.

The two specimens were taken in a very wet, swampy place.

The neurulation agrees exactly with that given by Alexander of his *A. cayuga*?; there, cross-vein r is represented as present. This figure differs from that accompanying the original description,³ where vein r is absent. Comparing the above type with a specimen of *cayuga*—minus abdomen—kindly given me by Dr. Alexander, *hazletonensis* is darker, the pleura anteriorly conspicuously dark brown, and paler posteriorly; the wings a trifle narrower, clearer pale gray and not yellowish near the base; the pubescence much more scanty and scarcely noticeable. I fail to see any long scattered hairs on the wing of *cayuga*, and the latter is a decidedly larger insect.

Genus **EPIPHRAGMA** Osten-Sacken

Epiphragma Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 238; Mon. N. A. Dipt., iv, p. 193.

Epiphragma fascipennis Say, Journ. Acad. Nat. Sci. Phila., iii, p. 19; Compl. Works, ii, p. 45, (*Limnobia*).

Common. May and June; in open woodlands on sandy soil near water; wet meadows.

Genus **LIMNOPHILA** Macquart

Limnophila Macquart, Suite à Buffon, Hist. Nat. Ins. Dipt., p. 95, 1834.

Subgenus **Dicranophragma** Osten-Sacken

Dicranophragma Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 240; Mon. N. A. Dipt., iv, p. 199.

Limnophila fuscovaria Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 240; Mon. N. A. Dipt., iv, p. 225.

Very common. May to August in moist places.

Subgenus **Ephelia** Schiner

Ephelia Schiner, Wiener Entom. Monatschrift., vii, p. 222, 1836; Schiner, Fauna Austriaca, ii, p. 549.

² The Crane-flies of New York, Part I, pl. xii, fig. 162.

³ Pomona Journ., iv, p. 830, 1912.

Limnophila aprilina Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 235; Mon. N. A. Dipt., iv, p. 223, pl. iv, fig. 23.

Not rare. June, July and August.

Subgenus **Lasiomastix** Osten-Sacken

Lasiomastix Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 233; Mon. N. A. Dipt., iv, p. 199.

Limnophila macrocera Say, Journ. Acad. Nat. Sci. Phila., iii, p. 20, 1823 Compl. Works, ii, p. 46, (*Limnobia*).

Not rare. Swampy localities, June, July and August.

Limnophila tenuicornis Osten-Sacken, Mon. N. A. Dipt., iv, p. 208, 1869.

Rare. My material was taken in June and July, from 1912 to 1916, none since.

Subgenus **Prionolabis** Osten-Sacken

Prionolabis Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 239; Mon. N. A. Dipt., iv, p. 197, pl. ii, fig. 3 and pl. iv, fig. 27.

Limnophila rufibasis Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 239; Mon. N. A. Dipt., iv, p. 225, pl. ii, fig. 3 and pl. iv, fig. 27.

Not rare. June and July in open woodlands; occasionally as early as April.

Limnophila mundoides Alexander, Journ. N. Y. Ent. Soc., xxiv, p. 120, pl. 8, fig. 3, 1916.

This species was of frequent occurrence in May and June, 1919. Not taken before or since.

Subgenus **Pseudolimnophila**

Pseudolimnophila Alexander, The Craneflies of New York, part 1, p. 917, 1919.

Limnophila luteipennis Osten-Sacken, Proc. Acad. Nat. Sci. Phila., p. 236; Mon. N. A. Dipt., iv, p. 217, pl. ii, fig. 10 and pl. iv, fig. 25.

Quite common. June to August, in open woods.

Limnophila nigropleura Alexander and Leonard, Proc. Acad. Nat. Sci. Phila., 1914, p. 592, pl. xxv, fig. 3.

Very common. June, July.

Limnophila inornata Osten-Sacken, Mon. N. A. Dipt., iv, p. 219, 1869.

Rare. June 5, 9, and 19, 1912; June 30, 1913.

Limnophila contempta Osten-Sacken, Mon. N. A. Dipt., iv, p. 218, 1869.
Not rare. May to August.

Subgenus **Eulimnophila** Alexander

Eulimnophila Alexander, The Craneflies of New York, part 1, p. 917, 1916.

Limnophila tenuipes Say, Journ. Acad. Nat. Sci. Phila., iii, p. 21, 1823;
Compl. Works, II, p. 46, (*Limnobia*).
Common. June to August.

Limnophila imbecilla Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859,
p. 237; Mon. N. A. Dipt., iv, p. 213.
A single female taken June 21, 1919.

Limnophila recondita Osten-Sacken, Mon. N. A. Dipt., iv, p. 212, 1869.
Very common in June and July some years ago; rather scarce
of late.

Subgenus **Phylidorea** Bigot¹

Limnophila adusta Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 235;
Mon. N. A. Dipt., iv, p. 196, 1869.
Rather common from May to August, some years ago, more
rarely seen of late years.

Limnophila lutea Doane, Journ. N. Y. Ent. Soc., viii, p. 191, 1900.
Of frequent occurrence from May to July in the years 1910 to
1916. No specimens taken since.

Limnophila adjuncta Dietz, Can. Ent., LII, p. 5, 1920.
June 5, 1911; June 11, 1912; June 1, 1915; May and June,
1919.

Limnophila consimilis spec. nov.

Similar to *adjuncta* Dietz in size and coloration, especially of the legs.
Costal cells not infuscated.

Male, length, 8.4 mm.; wings, 8.2 mm.

Head dark fuscous, the ground color concealed under a dense, gray pollin-
osity on the vertex, less marked on front and rostrum. Antennae of moder-
ate length, scapal joints dark brown, the first finely pruinose, elongate; the
second short, cyathiform; flagellum yellowish-brown, the hairs of the verti-
cels irregular, weak; pubescence whitish, long but not dense; joints elongated,
the basal three joints somewhat thickened. Thorax yellowish. Pronotum
reddish-brown in middle portion, extending upon the neck; lateral portion
of pronotal scutum reddish-brown; prescutal stripes distinct, dark reddish-

¹ Introduced here on the authority of Dr. Alexander, The Craneflies of
New York, part 1, pp. 918 and 919.

brown, highly polished and narrowly separated by fine lines of the ground-color; scutum reddish-brown, paler latero-posteriorly. Scutellum yellowish-brown, with scattered, pale hairs; postnotum yellowish-brown, paler laterally. Pleura brownish-yellow, shining. Halteres pale, pedicle finely pubescent, club infusate. Legs brown, coxae, basal fourth of anterior femora, basal third of middle femora and basal half of posterior femora, yellowish; tibiae pale brown, darkened at the apex, tarsi fuscous; pilosity blackish, dense and appressed. Wings pale yellowish, costal cells concolorous, stigma brown, distinct, the included part of R dark brown; apical portion, especially in costal region infusate; veins brown, M and A¹ paler; Sc¹ and ² approximately equal; Rs short, subangulate near base and about one half longer than R²⁺³; pedicle of cell M¹ a little longer than this cell. Abdomen sordid yellow, darker posteriorly, with rather long, scattered, pale hairs. Hypopygium ferruginous, hairy; appendages short, blackish.

Female, length, 10 mm.; wing, 9.5 mm.

Differs from the male in its larger size, the less defined and paler thoracic stripes. The abdomen entirely light brown. Ovipositor ferruginous, valves very slender, curved. The antennae differ scarcely from those of the male.

Holotype.—♂; Hazleton, Pennsylvania. June 28, 1912.

Allotype.—♀; topotypic, June 24, 1912.

Paratypes, males, topotypic, one, June 13, 1919; one, July, 1920; Palmerton, Carbon County, Pennsylvania, July 1, 1919; Black Mountains, North Carolina, June 1912, (W. Beutenmueller); females, topotypic, one, July 20, 1920; one, August 1, 1910; Palmerton, Carbon County, Pennsylvania, June 9, 1918; East River, Connecticut, June 1911, (Ely); Black Mountains, North Carolina, June 1912, (W. Beutenmueller).

Varies somewhat in distinctness of the thoracic stripes. The concolorous costal cells and somewhat larger size distinguish it from *adjuncta*.

Limnophila novae-angliae Alexander, Proc. Acad. Nat. Sci. Phila., 1914, p. 501, pl. xxv, fig. 4.

Rare. June 19, 1911; July 3, 8 and 12, 1912. Not found since, although the same swampy ground has been collected over yearly.

Subgenus ***Limnophila*** Macquart

Limnophila ultima Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 238, pl. iv, fig. 26; Mon. N. A. Dipt., iv, p. 222, pl. iv, fig. 24.

Not rare in September, from 1910 to 1915; not observed since.

Limnophila areolata Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 237; Mon. N. A. Dipt., iv, p. 211.

Not rare. June and July; swamps.

Limnophila brevifurca Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 237; Mon. N. A. Dipt., iv, p. 221.

Rare. May 15, 1911, the only record.

Limnophila fratria Osten-Sacken, Mon. N. A. Dipt., iv, p. 220.

Rare. June 4, 1917; a single male.

Limnophila subcostata Alexander, Can. Ent., XLIII, p. 288, 1911, (*Phyllidorea*).

Rare. May 27, 1912; a single male.

Limnophila toxoneura Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 236; Mon. N. A. Dipt., iv, p. 213.

Not rare. June and July.

Limnophila noveboracensis Alexander, Psyche, xviii, p. 196, pl. 16, fig. 3, 1911. This species should have been recorded under the subgenus *Pseudolimnophila*.

Rare. July 22, 1915; July 5, 1917.

Limnophila quadrata Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 241; Mon. N. A. Dipt., iv, p. 230, pl. ii, fig. 9.

Common. Occurs the whole season; most frequently in May and June.

Limnophila lenta Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 241; Mon. N. A. Dipt., iv, p. 231.

Very common. June to August, in swampy situations.

Limnophila congenita spec. nov.

Agrees with *L. lenta* in size and venation. They are distinguished as follows:

<i>lenta</i>	<i>congenita</i>
Antennae light yellowish brown.	Antennae brown.
The ninth tergite scarcely projecting in the middle.	Ninth tergite emarginate on each side, acutely projecting in the middle.
Pleurites elongate, straight, longer, diverging.	Pleurites compact, bent intradapically.
Penis guard bilobed at base.	Penis guard not bilobed.

Holotype.—♂; Hazleton, Pennsylvania, July 27, 1915.

Allotype.—♀; topotypic, June 17, 1911.

Paratypes, topotypic, eight males, June 19, 1912; one, June 5, 1912; one, June 13, 1919; two, June 22, 1919, and one, June 21, 1920.

Tribe *Hexatomini*

During the ten years devoted to the collecting of crane-flies, I have failed to take a single representation of this tribe.

Tribe *Pediciini*Genus **PEDICIA** Latreille

Pedicia Latreille, Gen. Crust. et Ins., iv, p. 255, 1809.

Pedicia albivitta Walker, List Dipt., Brit. Mus., i, p. 37, 1848.

Rare; only four specimen staken in September, one each in 1911, 1913, 1917 and 1919.

Genus **TRICYPHONA** Zetterstedt

Tricyphona Zetterstedt, Ins. Lapponica, Dipt., p. 851, 1838.

Tricyphona inconstans Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 247; Mon. N. A. Dipt., iv, p. 266, pl. II, fig. 15 and pl. IV, fig. 30.

Our commonest crane-fly; May to September.

Tricyphona calcar Osten-Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 247, (*Amalopis*); Mon. N. A. Dipt., iv, p. 268, pl. II, fig. 14.

Rare; in a swampy locality; May 27, 1920. One male.

Tricyphona autumnalis Alexander, Can. Ent., xli, p. 30.

Not rare in swampy localities; August, September.

Genus **DICRANOTA** Zetterstedt

Dicranota Zetterstedt, Ins. Lapponica, Dipt., p. 851, 1838.

Dicranota eucera Osten-Sacken, Mon. N. A. Dipt., iv, p. 281, 1869.

Very rare. June 16, 1915; July 25, 1914.

Genus **RHAPHIDOLABIS** Osten-Sacken

Rhaphidolabis Osten-Sacken, Mon. N. A. Dipt., iv, p. 284, 1869.

Subgenus **Rhaphidolabina** Alexander

Rhaphidolabina Alexander, Proc. Acad. Nat. Sci. Phila., 1916, p. 541.

Rhaphidolabis flaveola Osten-Sacken, Mon. N. A. Dipt., iv, p. 288, 1869.

Rare. June, 1912 and 1913; June 12, 1916; September 21, 1910.

Subgenus **Rhaphidolabis** Osten-Sacken

Rhaphidolabis Osten-Sacken, Monogr. N. A. Dipt., iv, p. 284.

Rhaphidolabis tenuipes Osten-Sacken, Mon. N. A. Dipt., iv, p. 287, 1869.

Infrequent in June and July, common in September, up to 1917. Not taken since.

Subfamily CYLINDROTOMINAE

Genus **LIAGMA** Osten-Sacken

Liogma Osten-Sacken, Mon. N. A. Dipt., p. 298, 1869.

Liogma nodicornis Osten-Sacken, Proc. Ent. Soc. Phila., iv, p. 239; Mon. N. A. Dipt., iv, p. 301.

Rather rare. May 28, 1909; June 11, 1909; June 26, 1910; June 22, 1912; June 5, 1919.

Genus **PHALACROCERA** Shiner

Phalacrocera Shiner, Wien. Ent. Monatschr., vii, p. 224, 1863.

Phalacrocera tipulina Osten-Sacken, Proc. Ent. Soc. Phila., iv, p. 241, 1865; Mon. N. A. Dipt., iv, p. 308, 1869.

Common in a small, wet area, from the fourth to twenty-sixth of May, 1919.

Phalacrocera neoxena Alexander, Proc. Acad. Nat. Sci. Phila., 1914, p. 603, pl. xxv, fig. 10.

One female taken June 30, 1913.

Subfamily TIPULINAE

Tribe *Dolichopezini*Genus **DOLICHOPEZA** Curtis

Dolichopeza Curtis, Brit. Ent., p. 62.

Dolichopeza americana Needham, N. Y. State Mus. Bull., 121, p. 211, pl. xvi, fig. 5, 1908.

Only two examples taken; June 4, 1912, and June 13, 1919.

Genus **OROPEZA** Needham

Oropeza Needham, N. Y. State Mus. Bull., 121, p. 211, 1908.

Oropeza albipes Johnson, Proc. Boston Soc. Nat. Hist., xxxiv, p. 121, pl. xv, fig. 12, 1909.

Common. June and July, in damp open woods.

Oropeza subalbipes Johnson, Proc. Boston Soc. Nat. Hist., xxxiv, p. 121, pl. xv, fig. 5 and 11, 1909.

Took a number of specimens in a swampy region, in June 1912, a few more were taken in June 1913, 1914 and 1915. Not seen since last record.

Tribe *Tipulini*

Genus **PACHYRHINA** Macquart

Pachyrhina Macquart, Hist. Nat. Dipt., I, p. 88, 1834.

Pachyrhina nobilis Loew, Cent., iv, p. 24.

Not rare in a small, swampy area; in June.

Pachyrhina virescens Loew, Berlin. Ent. Zeitschr., viii, p. 62, 1864; Cent. v, p. 25.

A single specimen, taken July 27, 1915.

Pachyrhina pedunculata Loew, Berlin, Ent. Zeitschr., vii, p. 293, 1863; Cent., iv, p. 33.

Rare. July 3, 1912; July 1, 1920.

Pachyrhina incurva Loew, Berlin Ent. Zeitschr., vii, p. 293, 1863; Cent., iv, p. 32.

Occurs frequently; May to August.

Pachyrhina macrocera Say, Journ. Acad. Nat. Sci. Phila., iii, p. 21, 1823; Compl. Works, ii, p. 48, (*Tipula*).

Very rare. June 11, 1912; July 19, 1916.

Pachyrhina macrocera var. **atrocera** Dietz, Trans. Am. Ent. Soc., XLIV, p. 118, 1918.

The holotype was taken at St. Johns, July 5, 1917; a second specimen secured at Hazleton, June 29, 1920.

Pachyrhina macrocera virgata subsp. nov.

Differs from the typical form in the posterior margin of the abdominal segments and the lateral margin of the tergum being conspicuously margined with black.

Holotype. - ♀; Palmerton, Carbon County, Pennsylvania. August 3, 1916.

Paratypes, females, topotypic, one, August 4, 1916; Hazleton, Pennsylvania, July 9, 1912, July 21, 1918, July 30, 1920, August 6, 1912; Casco Bay, Maine, July 1913.

Pachyrhina hirsutula Dietz, Trans. Am. Ent. Soc., XLIV, p. 118, pl. iv, fig. 4, 1918.

The two type specimens were taken May 23, 1916. No more individuals have been secured since.

Pachyrhina tenuis Loew, Berlin. Ent. Zeitschr., VII, p. 297, 1863; Cent., IV, p. 41.

Not rare. May to September.

Pachyrhina tenuis nigroantennata subsp. nov.

Differs from the typical form in its entirely fuscous antennal flagellum. The legs are brownish yellow and the abdomen darker posteriorly. The emargination of the eighth sternite is but sparsely beset with bristles.

Holotype.—♂; Hazleton, Pennsylvania. July 6, 1920.

Pachyrhina occipitalis Loew, Berlin. Ent. Zeitschr., VIII, p. 65; Cent., VI, p. 30.

One specimen, taken July 11, 1913.

Pachyrhina ferruginea Fabricius, Syst. Anth., p. 6, (*Tipula*).

Common. May to September, though less abundant of late years.

Pachyrhina beutenmuelleri Dietz, Trans. Am. Ent. Soc., XLIV, p. 130, pl. v, fig. 14, 1918.

In the description of this species, the locality for the holotype was erroneously stated as "Black Mountains, North Carolina," whereas it should have been—Hazleton, Pennsylvania, September 4, 1911. The paratype, however, came from the Black Mountains, North Carolina, (Wm. Beutenmueller).

Pachyrhina xanthostigma Loew, Berlin. Ent. Zeitschr., VIII, p. 65, 1864; Cent., V, p. 61.

Not rare. June to September.

Pachyrhina cingulata Dietz, Trans. Am. Ent. Soc., XLIV, p. 131, pl. v, fig. 17, pl. VII, fig. 30, 1918.

Not rare in a circumscribed, marshy locality; June to August. Not taken since 1915.

Pachyrhina stigmatica Dietz, Trans. Am. Ent. Soc., XLIV, p. 137, pl. VII, fig. 34, 1918.

A single male taken July 7, 1917. The types of this species were taken at Wyahising, Bradford County, Penna.

***Pachyrhina clandestina* spec. nov.**

In my Revision of *Pachyrhina*⁵ this form was tabulated in the "Synoptic Table of Species," but not mentioned in the body of the paper.

Near *brevicornis*. Joints of antennal flagellum bicolorous, yellow at base. Occiput entirely glabrous. A black spot before the lateral prescutal stripes. Abdomen with lateral row of oblique dashes.

Female, length, 15.5 mm.; wing, 13.5 mm.

Head and rostrum yellowish-red; mouth-parts dark fuscous. Palpi light brown, paler at base. Frontal prolongation with blackish hairs, much longer on nasus. Antennae of moderate length, scapal joints and first flagellar joint yellow, the latter darker at apex; following joints excised beneath, bicolored, basal half yellow. Occiput shining. Thorax sulphur yellow, shining above; stripes reddish-brown, sharply defined, interspaces narrow lines, almost effaced anteriorly; a well-marked oblique, black spot before the lateral stripes. Suture not tinted black. Scutum reddish-brown; median vitta and latero-posterior portion, sulphur yellow. Scutellum and postnotum, pale yellow, slightly infusate along the middle. Pleura concolorous, reddish spots on episterna; an oblique black dash on the lateral part of the pronotal scutellum, similar to the one on the prescutum and directly below it. Halteres obscurely yellow, club fuscous. Legs obscurely yellow, darkened by the dense, very short, blackish pilosity; femora broadly, tibiae narrowly, dark fuscous at the apex; metatarsi longer than the tibiae; tarsi infusate. Wings grayish, with a faint yellowish tint; costal cells and stigma yellow, the latter slightly darker; stem of cell M^1 as long as the basal deflection of R^{4+5} ; Cu^1 just before the fork of M .

Holotype.—♂; Hazleton, Pennsylvania. June 24, 1920.

Distinguished from allied species with bicolored flagellum, and the joints yellow at base, by the conspicuous black spots on the anterior part of the thorax.

The labella in this specimen present a curious modification. They are in the form of a pair of elongate, lanceolate blades. In an effort to separate them in situ, they broke off. Placed on a slide for examination they disclosed a peculiar organ, somewhat in the form of a tuning-fork, both arms of which are knob-like. enlarged at the end, the enlargement directed intrad; from the base, between these arms, a long, slender, stiletto-like rod extends a trifle beyond the arms. This structure, apparently, was underneath the labella. What its homology is, I do not know.

⁵Trans. Am. Ent. Soc., XLIV, pp. 105 to 110, pls. iv to vi.

Genus **NEPHROTOMA** Meigen

Nephrotoma Meigen. Illiger's Mag., p. 262, 1803.

Nephrotoma eucera Loew, Berlin. Ent. Zeitschr., vii, p. 296, 1863; Cent., iv, p. 39.

Not rare. June to August.

Genus **TIPULA** Linnaeus

Tipula Linnaeus, Syst. Natur., ed. x, p. 585.

Subgenus **Trichotipula** Alexander

Trichotipula Alexander, Proc. Acad. Nat. Sci. Phila., 1915, p. 468.

Tipula oropezoides Johnson, Proc. Boston Soc. Nat. Hist., xxxiv, no. 5, p. 131, 1909.

Occurred frequently in May and June, years ago, in open woods. Not taken since 1915.

Subgenus **Tipula** Linnaeus

Tipula trivittata Say, Journ. Acad. Nat. Sci. Phila., iii, p. 26, 1823; Compl. Works, ii, p. 50.

Rather common. May and June, open woods, meadows.

Tipula similissima spec. nov.

Agrees with *trivittata* in wing picture. Antennal flagellum unicolorous dark fuscous. Thoracic markings and abdomen alike in both.

similissima

Color of thorax more grayish-yellow; the mesosternum more distinctly infusate.

The emargination of the ninth tergite broadly triangular,⁶ sides with two or three denticles; lateral angles of the emargination not acute.

Outer apical appendages elongate-triangular; the lower apical appendages shorter, reaching scarcely further than to the middle of the former, bicuspidate, the upper cusp longer.

trivittata

Rather a pure gray; the darkening of the mesosternum obsolete, or much less evident.

Emargination broadly subreniform, a tooth-like projection from the middle of the emargination; lateral angles of the emargination very acute.

These appendages elongate-lanceolate; the lower apical appendages longer, reaching to the level of the ninth tergite, a spatula-like process at its base posteriorly, separated from the appendage by a U-shaped emargination.

Holotype.—♂; Hazleton, Pennsylvania. June 6, 1920.

Paratypes, males; topotypic, June 6, 1912, July 10, 1918 and

⁶ In my Synopsis of *Tipula*, etc., (Annals Ent. Soc. of America, 1913, p. 462) the reference to the ninth tergite of *trivittata* applies to the present species.

July 6, 1920. Black Mountains, North Carolina, May 1912. Peachland, Manitoba, Canada, July 14, 1912.

Specimens of both these species, taken in coitu, should be pinned, if possible, on the same pin, to determine differences, if any, between the females.

Specimens submitted to Dr. Alexander were considered distinct from *trivittata* and rather close to *angulata*. These three species, together with *entomophthanae* Alexander and *huntsmaniana* Dietz, have the joints of the flagellum bicolored; the angulate post-stigmal fascia reaches the posterior wing margin in *angulata*, not in *huntsmaniana*. *Entomophthanae* is distinguished from *trivittata* and *similissima* by the angulate fascia not reaching the posterior wing margin. The species *stylifera* has a bicolored flagellum, and is distinguished from all its allies by the long slender process of the hypopygial pleurite.

***Tipula stylifera* spec. nov.**

Trivittata group; joints of antennal flagellum bicolored. Hypopygial pleurite with a long, slender process.

Male; length, 14 mm.; wing, 18 mm.

Head yellowish-gray with dark, fronto-occipital line; frontal tubercle marked. Rostrum of moderate length, dusky-yellow; frontal prolongation grayish-yellow, pilosity very short, appressed and scarcely perceptible; nasus short, obtuse with a few hairs at the apex; mouth-parts dark fuscous; two basal joints of palpi grayish-yellow, outer joints fuscous. Antennae rather stout, three, basal joints yellow, following joints bicolored; basal enlargement marked, blackish, emarginate above the latter; verticels moderate, pubescence very short and fine. Thorax a sordid grayish-white. Pronotal scutum dark yellow, scutell pale, infusate laterally. Stripes of the prescutum grayish-fuscous, the median stripe broad anteriorly, greatly narrowed behind, with a whitish median line, expanded about the middle and narrowly margined with fuscous; lateral stripes about one-half the length of the median, irregularly margined with fuscous anteriorly; interspaces with black, setigerous punctures; pseudosutural foveae black, punctiform. Scutum fuscous, margin and median stripe yellowish-white; scutell gray, fuscous anteriorly; postnotum gray, with fuscous blotches. Pleura grayish-white, with irregular, pale fuscous blotches. Halteres dusky-yellow, club fuscous. Wings grayish-fuscous; a fuscous patch at base of cells R and M, origin of sector, stigma and peristigmal space, extending to the base of cells R³ and R⁴; cross-veins and longitudinal veins more or less seamed with fuscous; hyaline spaces in cells 1st R, basal part of R and M exterior to the fuscous patch, a large space at two-thirds of M, a small spot at one-fourth of A¹, two marginal spots in cell A¹, and several less distinct, in cell A²; the post-stigmal fascia

extends to middle of cell M¹. Legs dusky yellow; femora slightly infusate at the apex; tarsi darker. Abdomen yellow above, without median stripe; a light fuscous patch on tergite two; border of tergum whitish and more or less margined with fuscous within. Venter pale gray, somewhat dusky along the middle. Eight sternite entire. Hypopygium brown; ninth tergite transversely quadrate, apical margin slightly emarginate, angles acute, transversely impressed; ninth sternite with deep U-shaped emargination. Pleural suture complete; pleurite with a long and slender process from the posterior angle, nearly straight, directed dorsad. Outer apical appendages spatulate; the inner expanded fan-like, hatchet-shaped.

Holotype.—♂; Hazleton, Pennsylvania. June 6, 1911.

The process of the hypopygial pleurite might suggest a similarity to *macrolabis* or *macrolaboides*, in both of which, however, the process is much heavier and curved. The wing pattern, also, is very different. Its differentiation from allied forms has been considered under *similissima*.

Tipula fuliginosa Say, Journ. Acad. Nat. Sci. Phila., III, p. 18, (*Ctenopora*); Compl. Works, II, p. 44. (*Tipula speciosa* Loew is the male.)

A male specimen found June 12, 1912, in a pool of water.

Tipula hermannia Alexander, Proc. Acad. Nat. Sci. Phila., 1915, p. 180, (*Tipula fasciata* Loew).

Common. June to August.

Tipula sarta Loew, Berlin. Ent. Zeitschr., VII, p. 283, 1863; Cent., IV, p. 14.

Rare. June 13, 1913.

Tipula senega Alexander, Insec. Inscit. Menst., III, p. 128, 1915. (*Tipula pallida* Loew, Cent., IV, p. 16.)

Rare. June 2, 1913; June 6, 1920.

Tipula ultima Alexander, Insec. Inscit. Menst., III, p. 128, 1915. (*Tipula flavicans* Fabricius, Syst. Anth., p. 24.)

Abundant in September, on low grounds, open woods, etc. Have never observed this fly before September.

Tipula abdominalis Say, Journ. Acad. Nat. Sci. Phila., III, p. 18, 1823; Compl. Works, II, p. 45, (*Ctenophora*).

Conyngham Valley, September 2, 1915. A number of specimens taken, resting on the trunk of a small tree.

Tipula costalis Say, Journ. Acad. Nat. Sci. Phila., III, p. 23, 1823; Compl. Works, II, p. 48.

Not rare; July to September. Common among reed-grasses in dried-up swamp land.

Tipula valida Loew, Berlin. Ent. Zeitschr., vii, p. 287, 1863; Cent., iv, p. 24.
(*Tipula calva* Doane, Journ. N. Y. Ent. Soc., ix, p. 114.)

Rare. June 2, 1913, on a hillside about five miles west of Hazleton; June 6, 1919.

Tipula bella Loew, Berlin. Ent. Zeitschr., vii, p. 291; Cent., iv, p. 29.

May to September; more common in the earlier months.

Tipula strepens Loew, Berlin. Ent. Zeitschr., vii, p. 291, 1863; Cent., iv, p. 27.

Plentiful in a small area of dry waste land, in June 1912. Not observed since.

Tipula eluta Loew, Berlin. Ent. Zeitschr., vii, p. 290, 1863; Cent., iv, p. 27.

Rare. July 7, 1913; September 16, 1913.

Tipula fraterna Loew, Berlin. Ent. Zeitschr., viii, p. 56; Cent., v, p. 14.

A single specimen taken July 9, 1909.

Tipula tricolor Fabricius, Ent. Syst., iv, p. 235, 1794.

Rather common in former years, June and July; more rarely seen of late.

Tipula antiopa spec. nov.

Tricolor group, near *caloptera*. Antennal flagellum bicolored. Basal fourth of cell M infusate. Ninth tergite—male—produced in the middle.

Male; length, 17.5 mm.; wing, 21.5 mm.

Head. Face and front yellowish-gray; occiput gray with dark brown fronto-occipital line. Rostrum of moderate length; mouth-parts and palpi brown; frontal prolongation obscure yellow with a whitish bloom; nasus prominent, with short, black hairs. Antennae of medium length and thickness, scapal joints light brown, the second joint a little darker, the former transversely rugulose; first flagellar joint yellow, remainder yellow, basal enlargement blackish, somewhat emarginate beneath above the enlargement; setae of verticils strong, shorter than the respective segments, pubescence pale, very delicate and short. Thorax grayish-yellow. Pronotum brownish in middle and on the sides, the scutell whitish above. Presutal stripes brown, broad, margined with darker, the middle stripe slightly narrowed behind, with a black, median line. Scutum with gray and fuscous blotches, the ground color merely appearing as a narrow margin. Scutell concolorous, a brown patch on each side. Postnotum concolorous, fuscous posteriorly. Pleura concolorous, with dense, white pollinosity, prosternum and mesosternum darker. Halteres brown, extreme base yellow, club fuscous. Legs dark yellow, coxae pollinose, pilosity short, dense, black; femora and tibiae somewhat infusate towards the apices; tibiae shorter than the metatarsi; tarsi darker. Wings pale brown, costal cells yellowish-fuscous, vein dark brown, more or less heavily seamed with fuscous; the fuscous costal stripe interrupted